Coding Test Set 3

Program 1
Given two arrays of n numbers each, form a pair of numbers taking one number from array1 and the other from array2 such that the sum of the pair of this numbers is the maximum possible for the given arrays. Take input from STDIN. Don't use any sorting technique.
Input:
2 1 5 7 10
3 6 8 1 2
Output:
18

Program 2
Write a program to find factorial of a number using recursion.

Program 3
Display Pascal Triangle pattern. Pascal's triangle is a triangular array of the binomial coefficients.
Write a function that takes an integer value n as input from command line argument and prints first n lines of the Pascal's triangle. Optimize the time and space complexity.
Test Cases:
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1. VALID INPUT:
a) Only one argument will be given as input.
2. INVALID inputs:
a) Two or more than two arguments.
b) Characters other than digits.
3. You should generate output as follows:
a) Display pattern to the STDOUT without any additional text.
b) If error print 'ERROR' to the STDOUT without any additional text

Program 4
Write a program to find the sum of natural numbers using recursion.

Program 5
Given an array of elements of length N, ranging from 1 to N. All elements may not be present in the array. If element is not present then there will be -1 present in the array. Rearrange the array such that
A[i] = i and if i is not present, display -1 at that place. Take input from STDIN.
Examples:
Input : arr = {-1, -1, 6, 1, 9, 3, 2, -1, 4, -1}
Output : [-1, 1, 2, 3, 4, -1, 6, -1, -1, 9]
Input : arr = {19, 7, 0, 3, 18, 15, 12, 6, 1, 8, 11, 10, 9, 5, 13, 16, 2, 14, 17, 4}
Output : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Program 6
Write a program to make a simple calculator using switch...case.

Program 7
Write a program count the number of vowels from the string. Convert it from lower case to upper case and then reverse the string.
Examples:
Input:

Information
Output:
5
INFORMATION
NOITAMROFNI
Test Cases:
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1. VALID INPUT:
a) Only one argument will be given as input.
2. INVALID inputs:
a) No argument
b) Two or more than two arguments.
c) Characters other than alphabet.
3. You should generate output as follows:
a) Print to the STDOUT without any additional text.
b) If error print 'ERROR' to the STDOUT without any additional text

Program 8
Write a program to reverse a number using recursion

Program 9
Write a program to copy a File into another File. Take file name from command line argument.
Test Cases:
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1. VALID INPUT:
a) Only two argument will be given as input.
2. INVALID inputs:
a) No argument
b) More than two arguments.

Program 10
Write a program to count number of digits in an integer using recursion

Program 11
Given a 2D array, print it in spiral form. Take input from STDIN.
Examples:
Input:
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
Output:
1 2 3 4 8 12 16 15 14 13 9 5 6 7 11 10

Program 12
Write a program to check whether a number is prime or not using recursion.

Program 13
Given three arrays sorted in non-decreasing order, print all common elements in these arrays.
Take input from STDIN.
Examples:
Input:

ar1[] = {1, 5, 10, 20, 40, 80}
ar2[] = {6, 7, 20, 80, 100}
ar3[] = {3, 4, 15, 20, 30, 70, 80, 120}
Output: 20, 80

Program 14
Write a program to find factorial of a numbers using dynamic programming.

Program 15
Write a program that, given an array A[] of n numbers and another number K, find the pair of all elements in A whose sum is exactly K. Take input from STDIN.
Example:
Input:
A[]={1, 4, 15, 6, 10, 2}, K=16
Output:
(1, 15)
(6, 10)

Program 16
Read a number from STDIN, then display the sequence given below:
Input: 5552229333344
Output: 5222903341

Program 17
Given a string, find the second most frequent character in it. Take input from STDIN.
Examples:
Input: str = "aacbacbabaz";
Output: Second most frequent character is 'b'

Program 18
Write a program to display the sequence ZAZ, WCW, TET, QGQ, ……………….

Program 19
Find the GCD and LCM of Two number. Take input from command line argument.
Example:
Input:
30
40
Output:
10
120
Test Cases:
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1. VALID INPUT:
a) Only two arguments will be given as input.
2. INVALID inputs:
a) No argument

b) One argument

c) More than two arguments.

d) Characters other than digit

3. You should generate output as follows:

a) Print to the STDOUT without any additional text.

b) If error print 'ERROR' to the STDOUT without any additional text.

Program 20

Read a number from STDIN, then display the sequence given below:

Input: 5552229333344

Output: 5323913442